

High School Foreign Language and Postsecondary Achievement*

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Abstract

Foreign language courses have long been a staple in the American high school experience. Although a requirement for admissions to most 4-year colleges in Ohio, foreign language is not a requirement by the state for high school graduation. Do foreign language courses impact postsecondary achievement? Research suggests that studying foreign language has a positive impact on other coursework and has been linked to improvements in standardized test scores; however, little research shows a direct link between high school coursework and postsecondary success. This study is the first to compare educational outcomes of different levels of foreign language attainment for Ohio students. Using a dataset of Ohio State University students over the period 2000-2008, the analysis indicates that students who have studied foreign language in high school experience higher grade point averages and graduation rates than students who do not study foreign language or earn few foreign language credits. Students of color particularly benefit from earning at least three foreign language credits in high school. This information may assist policymakers and public administrators in decision-making as it pertains to K-12 and post-secondary alignment.

* I thank the Office of Enrollment Services, particularly Gail Stephenoff, for providing me with data to conduct this research.

Introduction

Many high schools encourage students to take foreign language courses, however, the state of Ohio does not require foreign language coursework for high school graduation. There are several studies that examine foreign language education. Studies link foreign language with achievement in other subject areas or success on standardized tests (Dumas, 1999; Saunders, 1998; Armstrong & Rogers, 1997; Robinson, 1998; Garfinkel & Tabor, 1991; Rafferty, 1986; Webb, n.d.). Additionally, Curtain and Dahlberg's study found cognitive a link between foreign language and skills in divergent thinking and creativity, and a higher self-concept (Curtain & Dahlberg, 2004). But there are no studies that examine the relationship between the completion of high school foreign language coursework and postsecondary achievement.

This study examines the educational performance of Ohio State University students who entered as first-years from Autumn 2000 to Autumn 2008. It examines the relationship between students' foreign language coursework in high school and their graduation rates, college GPAs, and college foreign language attainment. Specifically, the analysis considers how many foreign language credits students earned in high school as the primary independent variable. In order to account for differences in student characteristics, this study analyzes students in terms of foreign language level and characteristic subgroups.

College foreign language attainment is an indicator for motivation. College foreign language credits as a dependent variable may indicate whether students pursue foreign language because they enjoy studying foreign language, versus whether they

are required to study language by their high school. Without data indicating individual high school foreign language requirements, the study was unable to account for variation in policy that contributes to student foreign language credits. However, by examining college foreign language attainment, I was able to account for motivation. The study was limited by insufficient data regarding high school foreign language credit that transferred to college credit.

The results of this study using difference-in-means tests indicate that students who earn at least four or more foreign language credits achieve higher GPA's and are more likely to graduate. These results were particularly evident among high-income students, white students, and high SAT scorers. The results of my analysis align with preliminary results of regression analysis. Results do not provide sufficient evidence that all students who take more foreign language in high school are more likely to pursue foreign language in college.

Literature Review

Foreign Language and Academic Achievement

A large body of research regarding foreign language enrollment exists, however, no substantial research has provided linkage between high school foreign language coursework and postsecondary success. Despite little empirical connection between high school foreign language and college success, decades of relevant research have determined a positive relationship between foreign language and academic success more generally. Multiple analyses have identified foreign language as a predictor for success on reading and math tests (Dumas, 1999; Saunders, 1998; Armstrong & Rogers,

1997; Robinson, 1998; Garfinkel & Tabor, 1991; Rafferty, 1986; Webb, n.d.). Studies have also shown that studying a foreign language yields higher scores on both the ACT and the SAT (ACT, 2005; Cooper, 1987; Eddy, 1981; Olson, 1992; Robinson & Conway, 2005; Timpe, 1979). Researchers also assert that studying more than one foreign language can positively impact test scores (ACT). In addition to standardized testing, many studies have shown that studying a foreign language can have positive impacts on other aspects of the learning process. Some skills most benefitted through foreign language are greater skills in divergent thinking and creativity, and a higher self-concept (Curtain & Dahlberg, 2004).

Foreign Language and High School Curriculum

Foreign language has long been a requisite component of higher education: first because many colleges and universities require some foreign language credit for admission, and second because many students must take foreign language courses to fulfill general education requirements at their chosen college or university (Somerville and Yi, 2002). Despite the presence of foreign language in higher education, states seldom require foreign language coursework in high school (Somerville and Yi 2002). Ohio is in the majority as a state that does not require foreign language in its high school core curriculum. Rather, Ohio identifies foreign language as an elective course—an option among many for students to take.

Experts in K-12 and higher education alike have questioned the incongruence between K-12 and postsecondary foreign-language requirements. Research performed by the State Higher Education Executive Officers and the U.S. Department of Education

identified a lack of consensus between K-12 and higher education as the primary reason for the discontinuity in K-12 and postsecondary expectations, citing foreign language as representative case (Somerville and Yi 2002). Somerville and Yi clarify that about half of higher education institutions require at least two years of high school foreign language coursework; however, only a “handful” of K-12 systems require any foreign language (Somerville and Yi 2002). Even so, the “requirements” that Somerville and Yi refer to are often misleading in name because many K-12 systems that have any foreign language “requirement,” often allow it to be substituted for coursework in another subject (NCSSL 2010).

Foreign Language Education in Ohio

Despite the important role it plays in the pursuit of higher education, the Ohio Department of Education (ODE) does not identify foreign language as a requirement for high school graduation (ODE, 2014). Ohio joins a majority of states that do not require foreign language for matriculation (NCSSL, 2010). On the contrary, foreign language is at least highly recommended, if not required, for admission to Ohio’s top universities, including The Ohio State University (Undergraduate Admissions, 2015). Foreign language is clearly emphasized in the college prep curriculum, but still, only 26.2% of Ohioans hold a Bachelor’s degree, which is well below the national average (Exner). It may seem practical for high school graduation requirements to align with college admissions coursework requirements, but they do not. One might suspect that a reason for this disconnect is the missing link between high school foreign language and success in higher education.

The state of Ohio has embraced the impact of foreign language in the past. In 2007, a cohort within ODE called the Foreign Language Advisory Council (FLAC) developed a proposal to include more high school requirements in foreign language (FLAC). FLAC's proposal was motivated by the assertion that "increasing world language capacity and global awareness are paramount to Ohio's continued economic and strategic success" (FLAC). The report, "Passport to the Future: Ohio's Plan for World Language," identified the need for streamlined foreign language standards across the state. FLAC specifically recommends foreign language to be included in Ohio's graduation requirements at or before high school level, while also providing a comprehensive implementation guide. Further, FLAC acknowledges that at this point, foreign language coursework is reserved for "college-bound" students, and moreover recommends that foreign language be expanded to include all students (FLAC). The committee recommended adding foreign language to Ohio CORE graduation requirements and provided benchmarked recommendations for foreign language academic standards. Due to changes in the state's education allocations and a change in administration, the proposal never evolved to legislation at the Ohio statehouse.

Theory and Hypotheses

The theory behind this study is rooted in the idea that foreign language provides cognitive benefits to students and should impact the success of an individual. Studies have shown that foreign language can improve performance on standardized tests, in other subjects, and impact creativity and self-concept, which suggests that studying foreign language in high school might contribute to college achievement in general.

The longstanding placement of value on foreign language from colleges assumes that foreign language is a standard by which students prove their skill and qualification for that university. Given these factors, one may suspect that when applied en masse, students with longer or more advanced exposure to foreign language in high school perform better in college. Students who take more years of foreign language coursework should be more likely to graduate, and achieve higher grade point averages.

Data and Methodology

The study employs administrative data from the Office of Enrollment Services–Analysis and Reporting (OESAR). I analyzed student data from 2000 to 2008 to examine the impact of high school foreign language study on the post-secondary educational performance of OSU students. I relied upon OESAR’s system for reporting and classifying students according to ethnicity and social group.

The dataset is limited to students who graduated from Ohio high schools, totaling 45,705 students between 2000 and 2008. Data for each student indicate graduation status, enrollment status, graduation year, GPA at graduation, major, minor, high school, high school rank, SAT score, ACT score, ethnicity, gender, social group, high school foreign language credits, and college foreign language credits.

I analyzed the relationship between the quantity of OSU students’ high school foreign language coursework and these students’ general success at OSU. Key variables include high school foreign language credits, high school SAT scores, high school ACT scores, college GPA, and college graduation rate. To ensure accuracy in analysis, I

controlled for the following variables that are known to contribute to measures of college achievement: ethnicity, social group, and SAT scores.

Table 1 provides descriptive statistics for the study's major variables. The primary dependent variable is high school foreign language level, which is denoted by the number of credits reported along the top row. The table breaks down each foreign language level by number of students, SAT score, ethnicity, socioeconomic status, and gender. The Ohio State University's Office of Enrollment Separated socioeconomic status into 25 categories, which differed per year reported. This study condensed the 25 categories into three: high income, middle income, and low income.

Table 1	All OSU	<1 FL Credit	1-1.9 FL Credit	2-2.9 FL Credit	3-3.9 FL Credit	4-4.9 FL Credit	5-5.9 FL Credit	6+ FL Credit
Number of Students	45705	245	271	5237	20026	14498	4544	884
Average SAT Score	1190	1127	1137	1134	1174	1206	1234	1243
% African American	7.6%	18.4%	15.7%	11.7%	7.6%	6.4%	5.5%	9.1%
% Hispanic	2.3%	2.9%	1.8%	2.1%	2.0%	2.5%	3.3%	4.3%
% Low Income	12.4%	24.1%	15.1%	15.6%	13.1%	11.8%	7.2%	11.6%
% Female	50.3%	40.0%	35.1%	37.4%	47.9%	55.4%	59.3%	61.9%

Table 1 indicates that average SAT score is higher among students with more foreign language credit. It also indicates that low-income students take less foreign language. As such, one may assume that students with more foreign language perform better on the SAT simply due to socioeconomic status and the educational benefits a higher income level affords students. This study analyzes each group of students to account for differences in student characteristics.

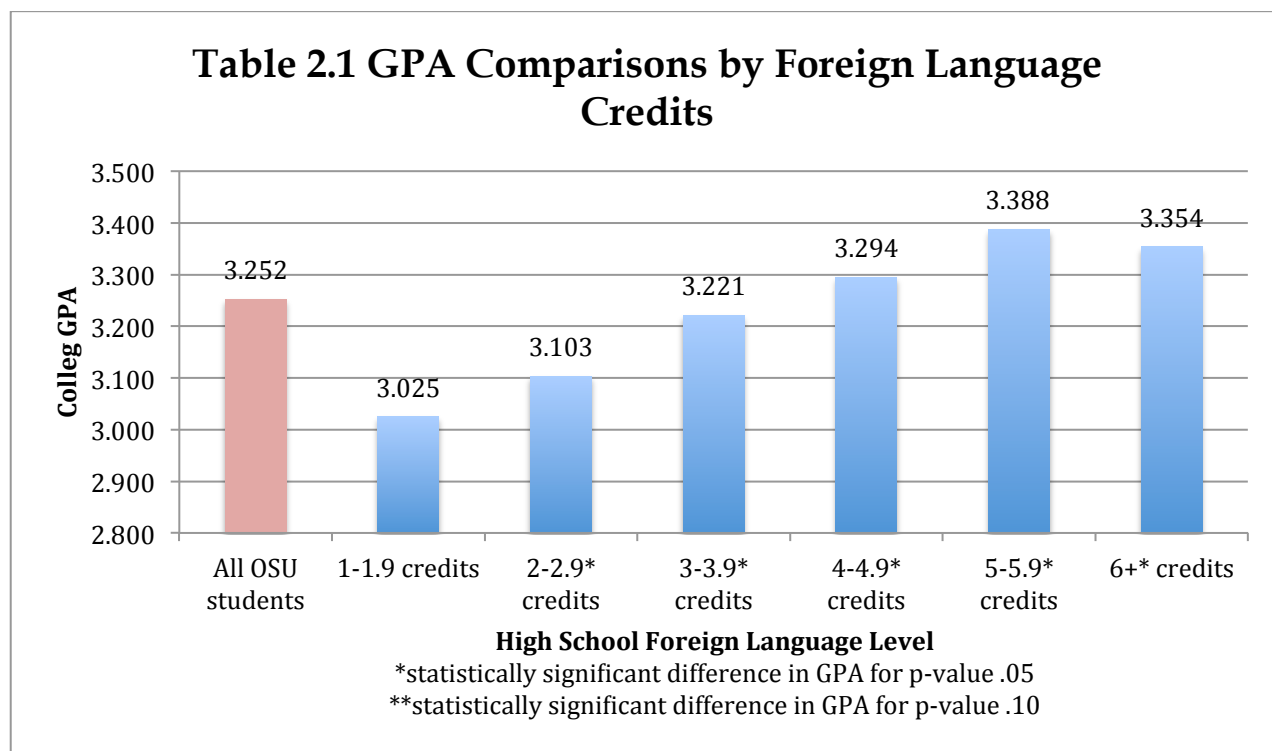
Data Analysis

This study examines the relationship between high school foreign language level (the key independent variable) and college GPA, graduation rates, and college foreign language credit hour attainment (key dependent variables). GPA and graduation rates are the primary indicators of college achievement. College foreign language attainment indicates student motivation: do students pursue foreign language because they want to, or because they have to? To best provide reliable estimates of foreign language impact on college achievement, I examine foreign language level and college outcomes while holding constant student characteristics described in Table 1, as they are predictors of college achievement. To do so, I perform a series of difference-in-means t-tests for student demographic groups for each outcome measure in order to increase confidence that the results are not attributable to differences in students. For each student subgroup I compare the difference in means of the student foreign language level in question and the lowest level of high school foreign language. I eliminated the category of students who earned less than one credit of foreign language in high school due to insufficient data for that level.

Results

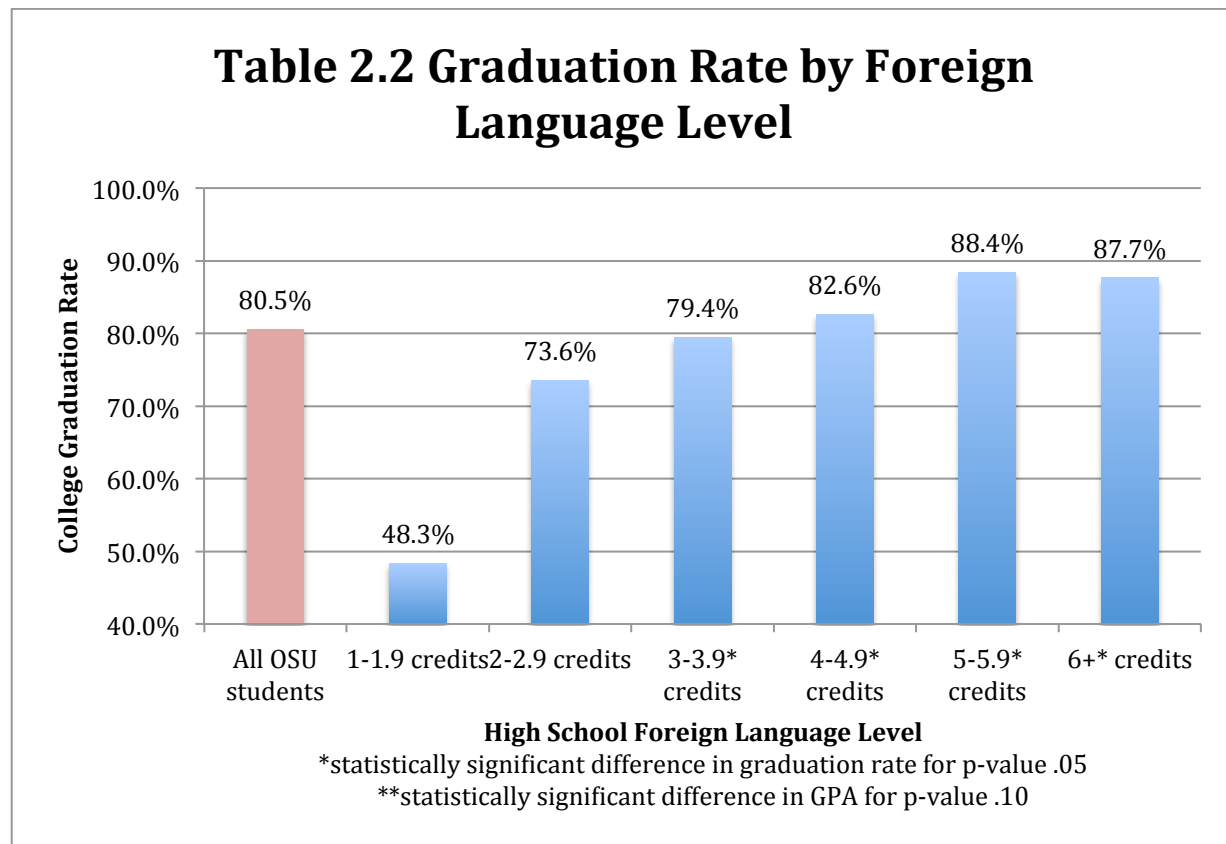
Basic comparisons of college outcomes indicate that students with more high school foreign language credits perform better in college. Table 2.1 shows comparisons of college GPA per high school foreign language level. The average GPA for all OSU students was 3.252. Students with 5-5.9 foreign language credits earned the highest average GPA, 3.88. Compared against students who earned 1-1.9 credits of foreign language, the difference in GPA was statistically significant for all foreign language

levels ($p < .05$ for a two-tailed t-test). Students that earned four or more foreign language credits earned a higher college GPA than the OSU average GPA. The differences between average GPA per foreign language level and the average OSU GPA are statistically significant for all foreign language levels.



Examination of graduation rates yields similar results. The average graduation rate for all OSU students was 80.5%. Students with 5-5.9 credits in foreign language had the highest graduation rate with 88.4% of students graduating. Students with at least four foreign language credits graduated at a higher rate than the average OSU graduation rate. Like GPA, students who earned less than four foreign language credits had graduation rates lower than the OSU average. When compared against students who earned 1-1.9 foreign language credits, the differences between average graduation

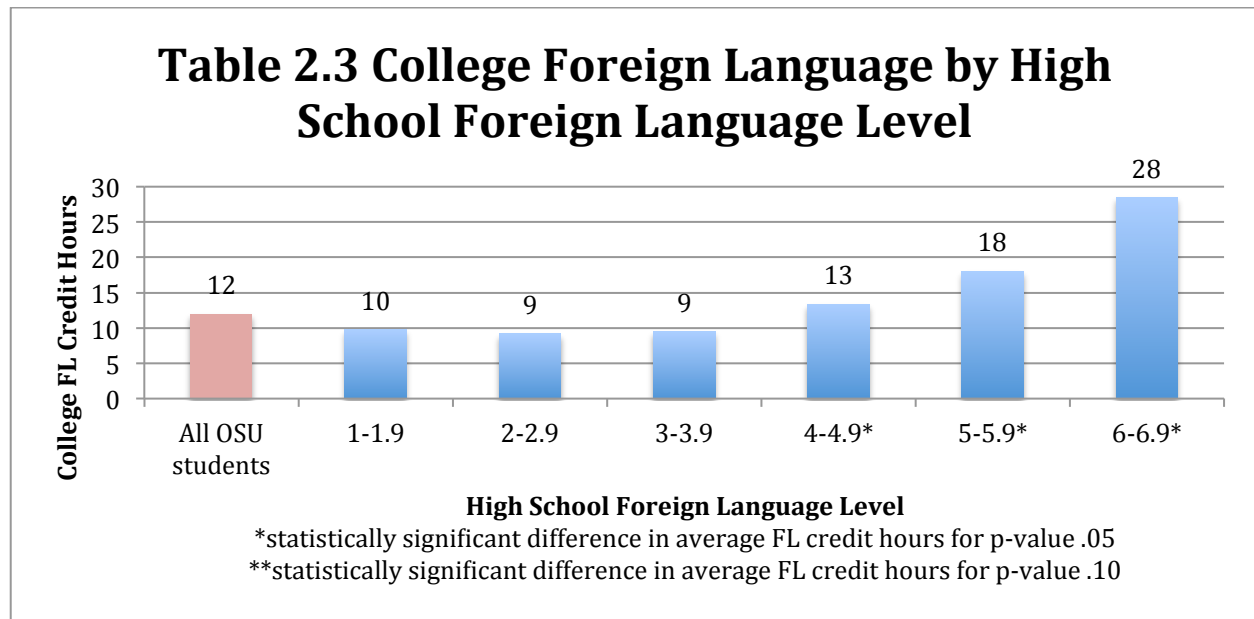
rates per foreign language level are statistically significant for all students who earned more than three foreign language credits ($p < .05$ for a two-tailed t-test).



Analysis of high school foreign language and college foreign language yields similar results. Students who earned between one and 3.9 foreign language credits generally pursued college foreign language at the same rate, earning between nine and ten credit hours in college. This generally aligns with OSU general education requirements for foreign language. However, students who earned at least four foreign language credits in high school were more likely to pursue more foreign language in high school. When compared against students in the 1-1.9 level, the differences in means for students with 4-4.9, 5-5.9 and 6+ credits were statistically significant ($p < .05$). The average foreign language credit hours for students who earned more than six

foreign language credits was 28, which suggests that students in that category elect to pursue foreign language as a major or minor.

One might notice that average foreign language attainment is higher for students in the 1-1.9 level than for students who earned 2-3.9 foreign language credits. This is likely due to OSU's general education requirements and the ability for students to apply high school credit.



Low-Income Students

Comparing overall averages for foreign language levels provides some suggestive evidence for the hypothesis; however, further analysis is needed to control for other indicators of college achievement. Consolidating student characteristics into more specific subcategories should provide convincing evidence by holding characteristics constant. For example, do students who take more foreign language outperform their peers because foreign language impacts performance, or because those

same students come from a higher socioeconomic background? Tables 3.1 and 3.2 show the subgroup analysis of GPA and graduation rate for low-income students only.

Low-income students who earned at 4-4.9 credits of foreign language had an average GPA of 3.13 compared to the 3.25 average GPA of all OSU students. Low-income students who earned 3-3.9 foreign language credits had an average 3.13 GPA in college, earning the same average GPA as low-income students with 4-4.9 foreign language credits. Although low-income students with 4-4.9 more foreign language credits earned lower GPA's on average than the average student and students with 3-3.9 foreign language credits, they earned the same average GPA as all low-income students and low-income students who earned 3-3.9 credits. Results were statistically different when compared against students who earned 1-1.9 credits for low-income students for students earning 2-2.9 credits and 4-4.9 credits ($p < .05$), and 6+ credits ($p < .10$). These results indicate that foreign language does not necessarily lead to a higher GPA for low-income students, with the exception of students who earned 6+ credits.

Results for graduation rate indicate a stronger relationship than GPA. Low-income students who earned at least four foreign language credits graduated at rates higher than the low-income average of 70.4%. Although low-income students who earned greater than four foreign language credits graduated at a lower rate than the average OSU student and students with 3-3.9 credits, they had a higher graduation rate than all low-income students and low-income students who earned 3-3.9 credits. When

compared against students with 1-1.9 foreign language credits, the results for students with greater than four foreign language credits were statistically significant ($p < .05$).

For low-income students, results show that students who earned at least four foreign language credits took higher levels of foreign language in college. However, the differences in foreign language levels were not statistically significant.

Table 3.1 Low-Income GPA

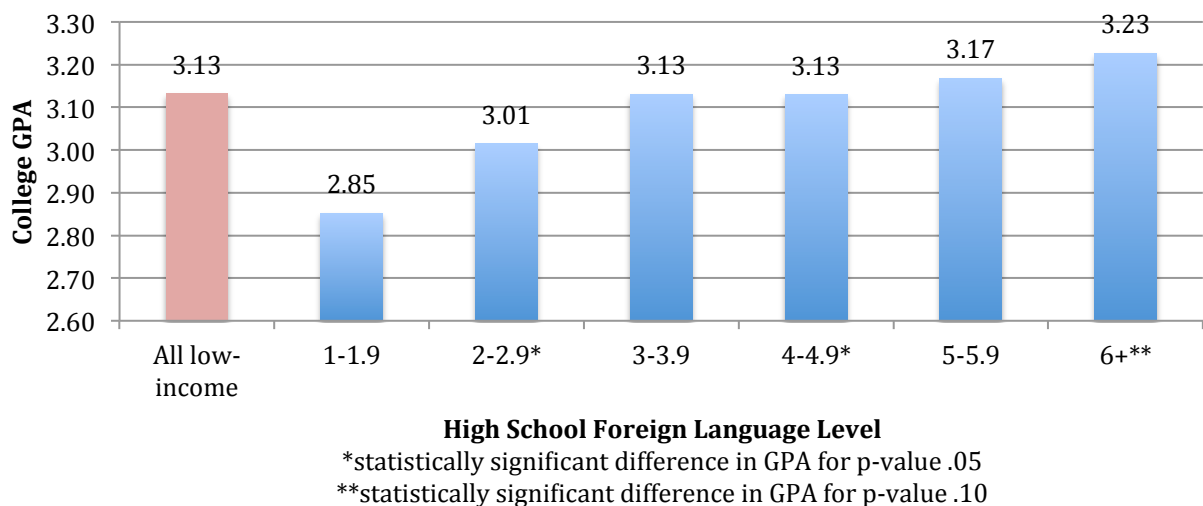


Table 3.2 Low-Income Graduation Rate

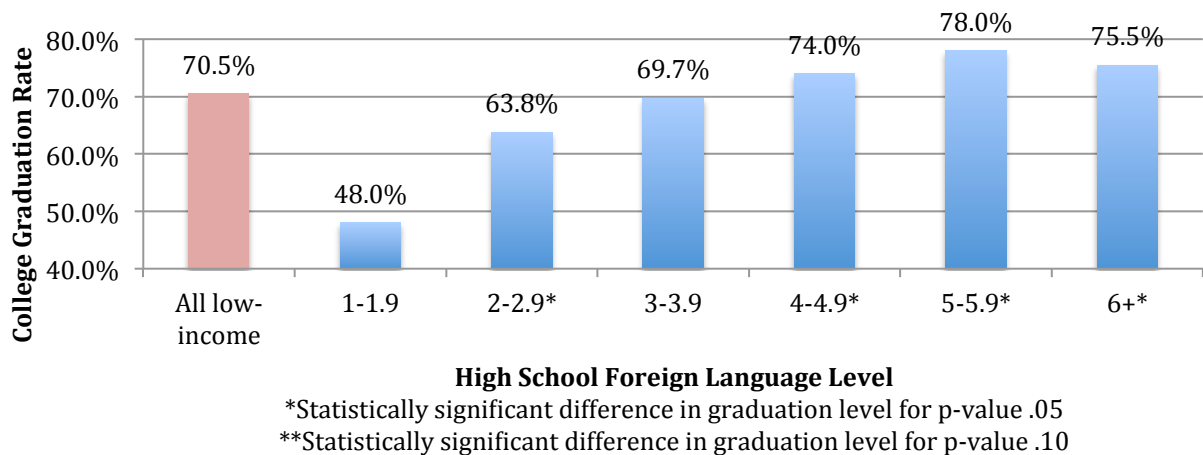
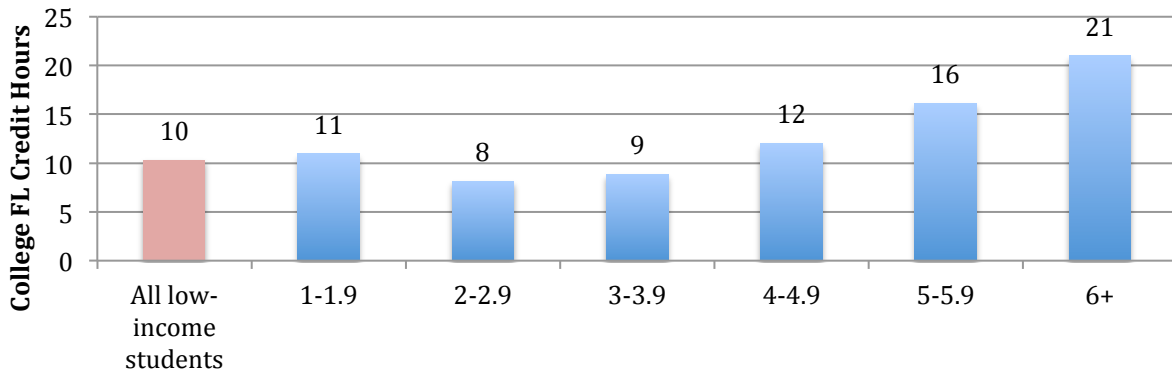


Table 3.3 Low-Income College Foreign Language Credit Hours



High School Foreign Language Level

*Statistically significant difference in average FL credit hours for p-value .05

**Statistically significant difference in average FL credit hours for p-value .10

High-Income Students

High-income students with at least four foreign language credits earned a higher average GPA and higher graduation rates than the average for all high-income students. High-income students with 4-4.9 foreign language credits earned an average 3.32 GPA. The average GPA for high-income students is higher than the overall average GPA for OSU. When compared against the GPA for students in the 1-1.9 level, differences in GPA were statistically significant for students who earned at least three foreign language credits ($p < .05$).

Graduation rates for high-income students steadily increased for each foreign language level. Students who earned at least four foreign language credits had a higher graduation rate than the average for all high-income students. When compared against the graduation rate for students in the 1-1.9 level, the differences in rates were

statistically different for all foreign language levels ($p < .05$). Results for high-income GPA and graduation rate are shown in tables 4.1 and 4.2.

High-income students who earned minimal foreign language credits had higher than average college foreign language attainment; however, this may be explained by OSU's general education requirements. High-income students who earned 6+ foreign language credits in high school earned an average of 24 credit hours in foreign language in college (statistically significant with $p < .05$). The high level of college language attainment suggests that these students elect to pursue a foreign language major or minor.

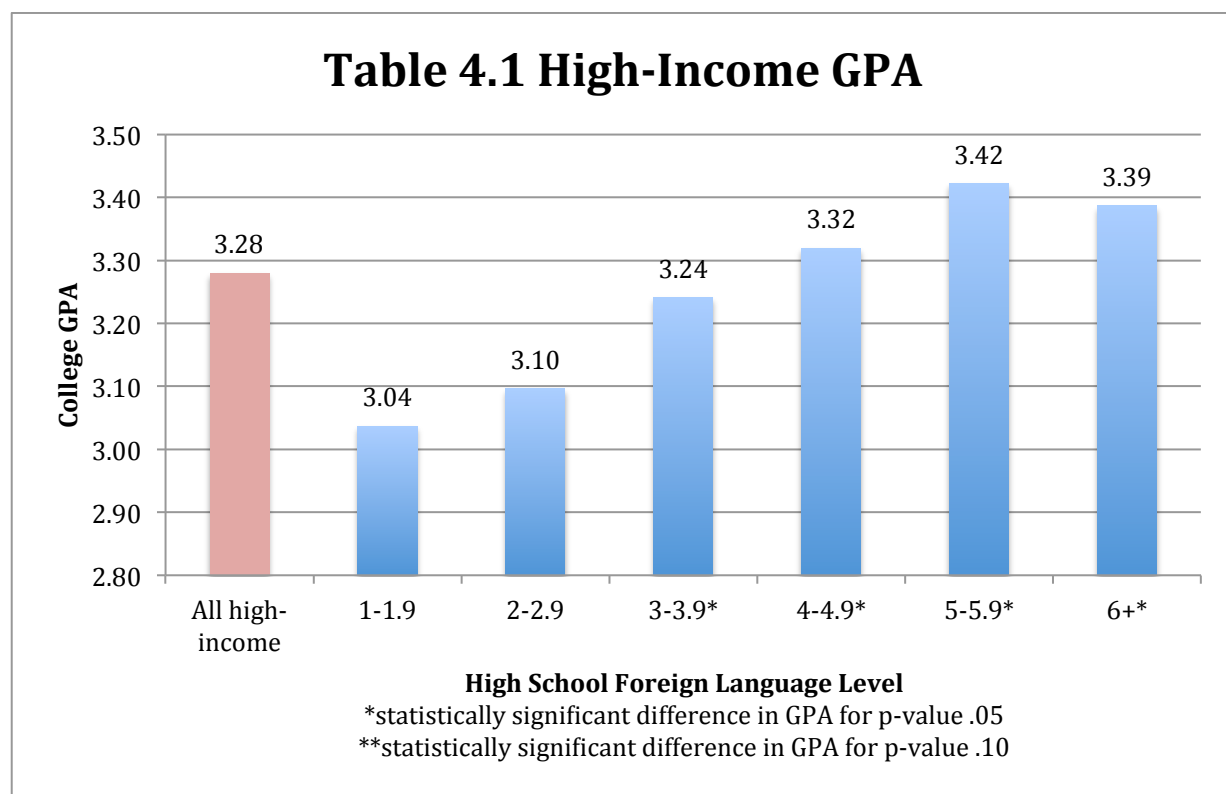
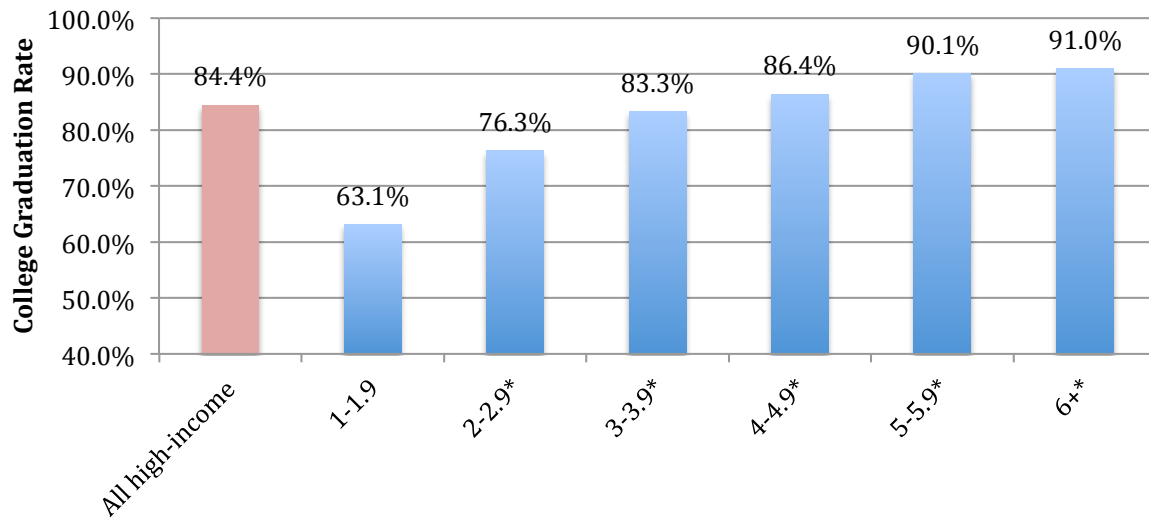
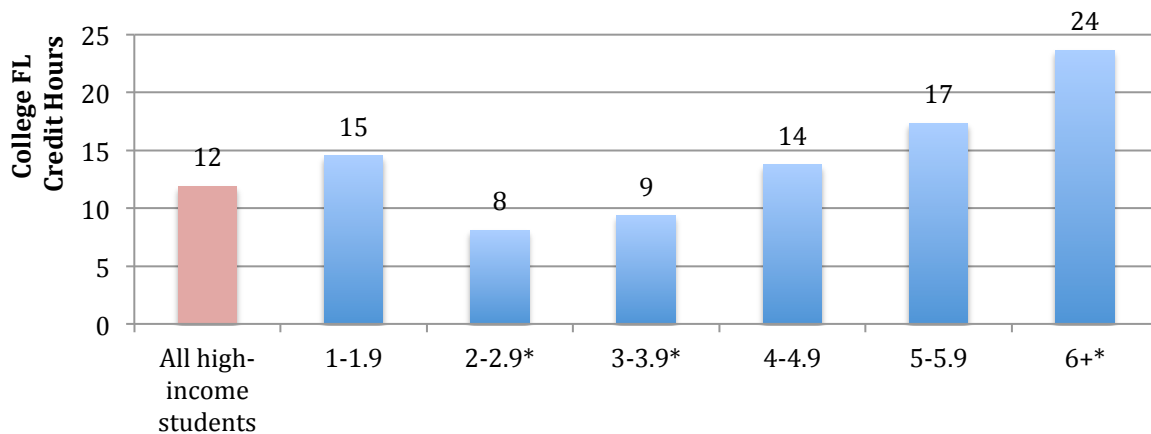


Table 4.2 High-Income Graduation Rates**High School Foreign Language Level**

*Statistically significant difference in graduation rate for p-value .05

**Statistically significant difference in graduation rate for p-value .10

Table 4.3 High-Income College Foreign Language Credit Hours**High School Foreign Language Level**

*Statistically significant difference in average FL credits for p-value .05

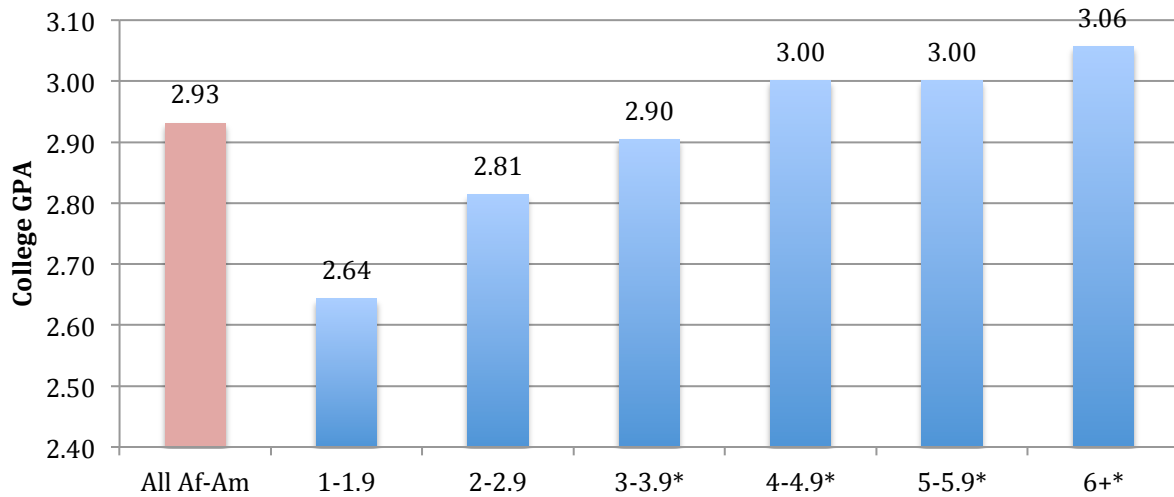
**Statistically significant difference in average FL credits for p-value .10

African American students

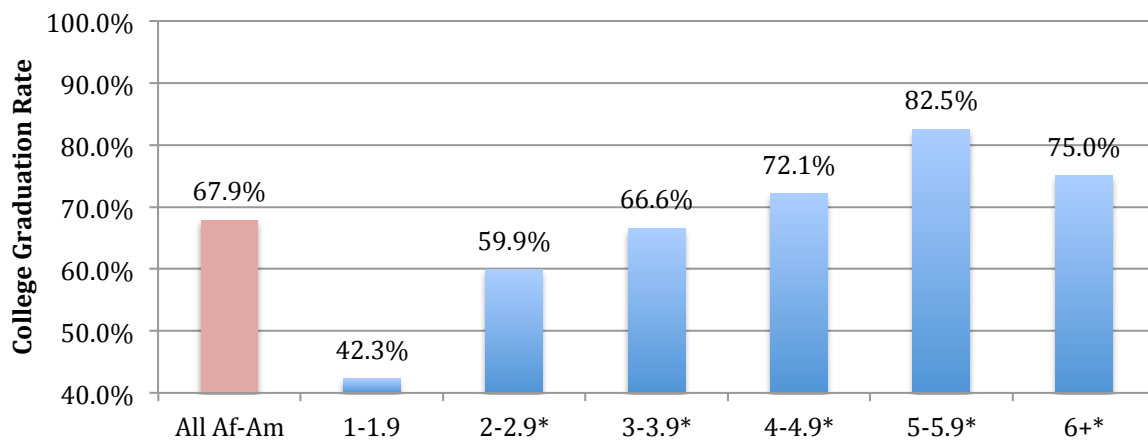
The average GPA for all African American students in the dataset was 2.93. This was well below the average GPA for all OSU students, which was 3.52. It is important to note that, across all foreign language levels, the GPA for African American students was below the overall average OSU GPA. Still, African American students who earned at least four credit of foreign language in high school earned a higher GPA than the average for African American students. When compared against the average GPA for the 1-1.9 level, differences in GPA for African Americans was statistically significant for all foreign language levels except 2-2.9 credits ($p < .05$).

Graduation rates for African American students reflect a similar trend. The average graduation rate for all African Americans is 67.7%, much lower than the average for all OSU students, which was 80.5%. African American students who earned at least four credits of foreign language had a higher graduation rate than the average for all African Americans. Differences in African American graduation rates were statistically significant compared against the 1-1.9 level for all foreign language levels ($p < .05$). Tables 5.1 and 5.2 show the GPA and graduation rates for African American students.

For African American students, high school foreign language appears to have very little effect on college foreign language attainment. Differences in results in this subgroup were not statistically significant when compared to the 1-1.9 level.

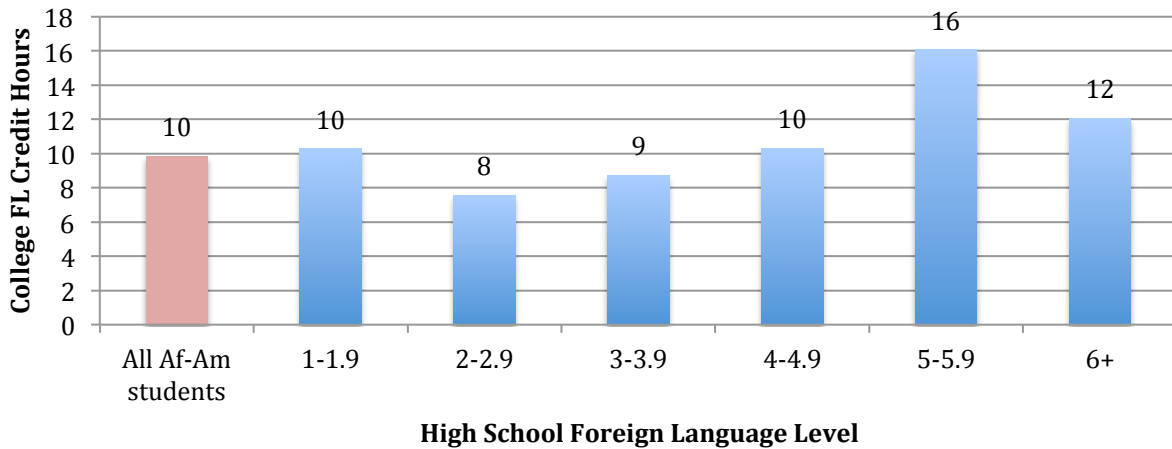
Table 5.1 African American GPA

*statistically significant difference in GPA for p-value .05
**statistically significant difference in GPA for p-value .10

Table 5.2 African American Graduation Rates

*statistically significant difference in GPA for p-value .05
*statistically significant difference in GPA for p-value .10

Table 5.3 Af-Am College Foreign Language Credit Hours



*Statistically significant difference in average FL credits for p-value .05

**Statistically significant difference in average FL credits for p-value .10

Hispanic students

The Hispanic student subgroup did not indicate such drastic differences in GPA as other subgroups. Students who earned at least three foreign language credits saw higher GPAs than the average. Differences in GPA when compared to the 1-1.9 level were statistically significant for students who earned at least five foreign language credits ($p < .10$)

The graduation rates for Hispanic students saw vast disparity among foreign language levels. The average graduation rate for all Hispanic students was 75.3%; however, students who earned 1-1.9 credits of foreign language saw an average graduation rate of only 50%. This varied greatly against students with 6+ foreign language credits that graduated at a rate of 92.1%. When compared against the 1-1.9 foreign language level, differences in graduation rates were not statistically significant. Results from the Hispanic student subgroup are displayed in tables 6.1 and 6.2.

Results indicate that Hispanic students with at least four high school foreign language credits pursued higher levels of foreign language in college. Unlike other subgroups, the average number of college foreign language credit hours attained for students in the 1-1.9 level was very low at only 3. When compared against the 1-1.9 foreign language level, differences in average college language attainment were statistically significant for students who earned at least four foreign language credits in high school ($p < .05$).

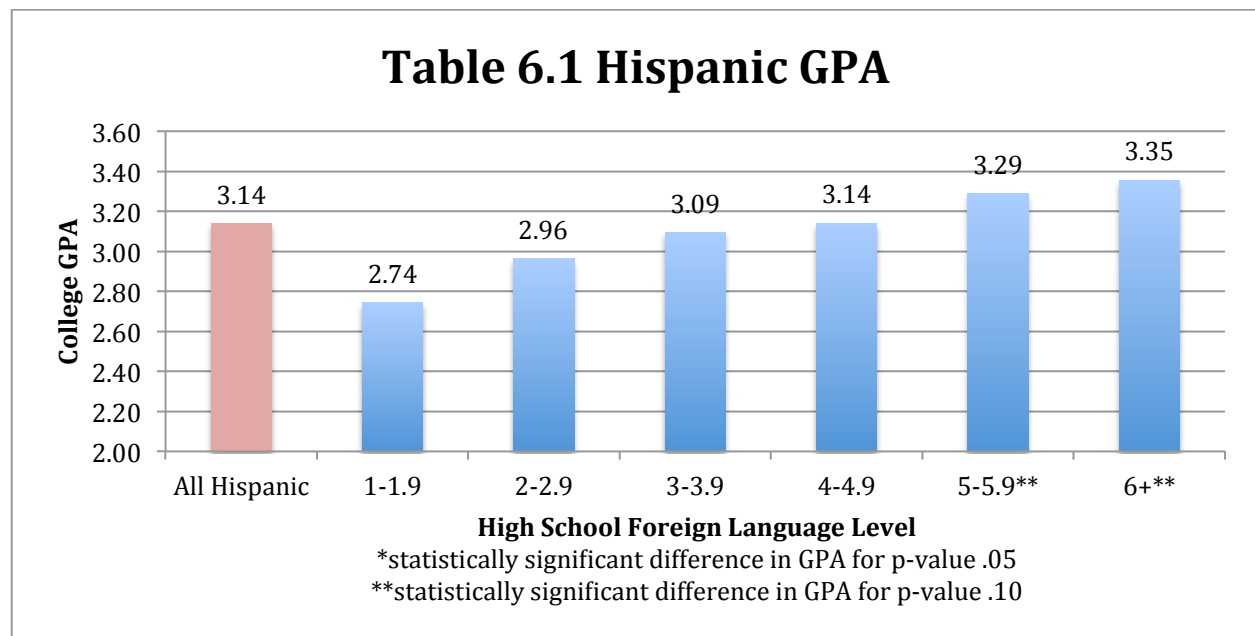
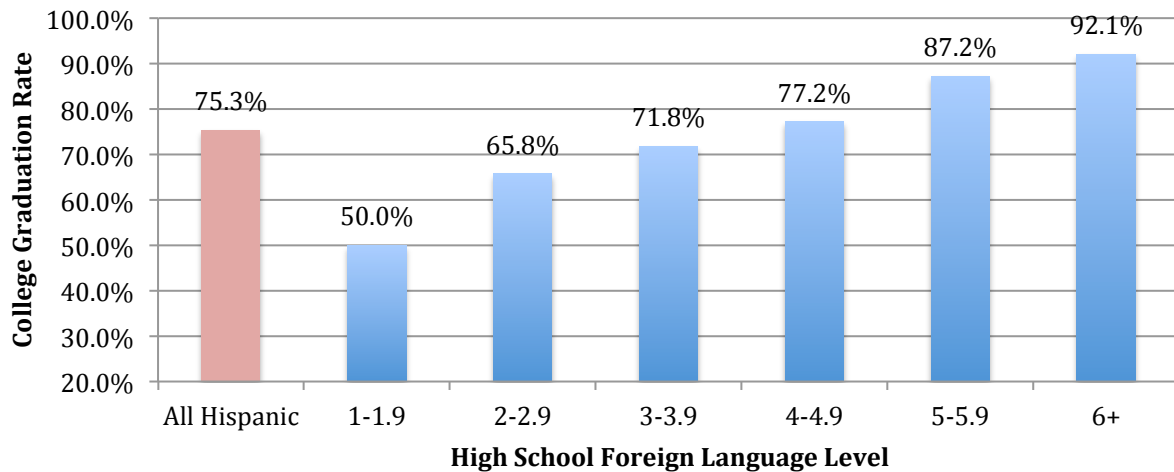
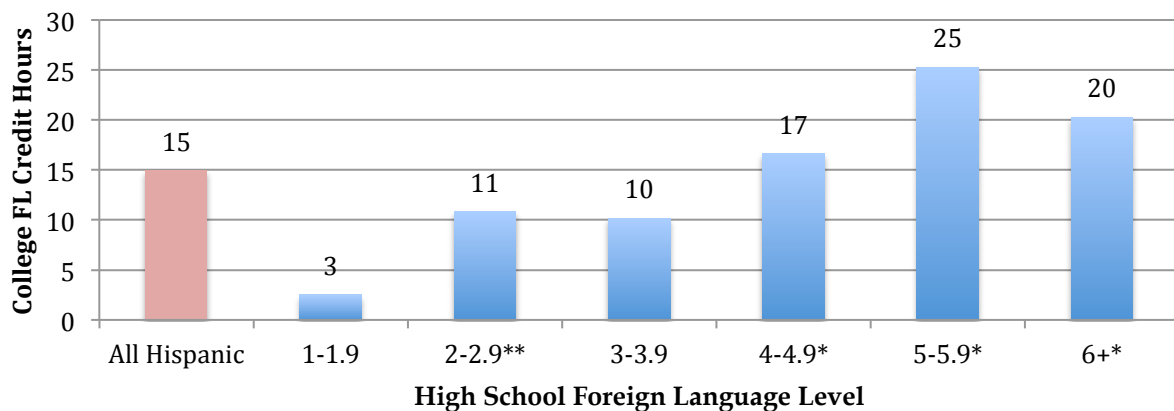


Table 6.2 Hispanic Graduation Rate

*statistically significant difference in graduation rate for p-value .05
 **statistically significant difference in graduation rate for p-value .10

Table 6.3 Hispanic College Foreign Language Credit Hours

*Statistically significant difference in average FL credits for p-value .05
 **Statistically significant difference in average FL credits for p-value .10

White students

White students make up the largest demographic subgroup. The average GPA for all white students was 3.28. Results show that white students who earned at least four foreign language credits achieved an average GPA higher than the average for all

white students. When compared against the average GPA of students in the 1-1.9 level, the differences in GPA were statistically significant across all foreign language levels ($p < .10$, $p < .05$).

Likewise, students who earned at least four foreign language credits also saw an average graduation rate higher than the average for all white students. When compared against the 1-1.9 foreign language level, differences in graduation rates were statistically significant across all foreign language levels ($p < .05$).

The average foreign language credit hour attainment is the same for students who earn 1-3.9 high school foreign language credits at just nine credit hours. Students who earned at least four foreign language credits yield higher college foreign language attainments levels than the average for all white students (11 credit hours). When compared against the 1-1.9 foreign language level, the differences in average credit hours were statistically significant for levels 4-4.9, 5-5.9, and 6+ ($p < .05$).

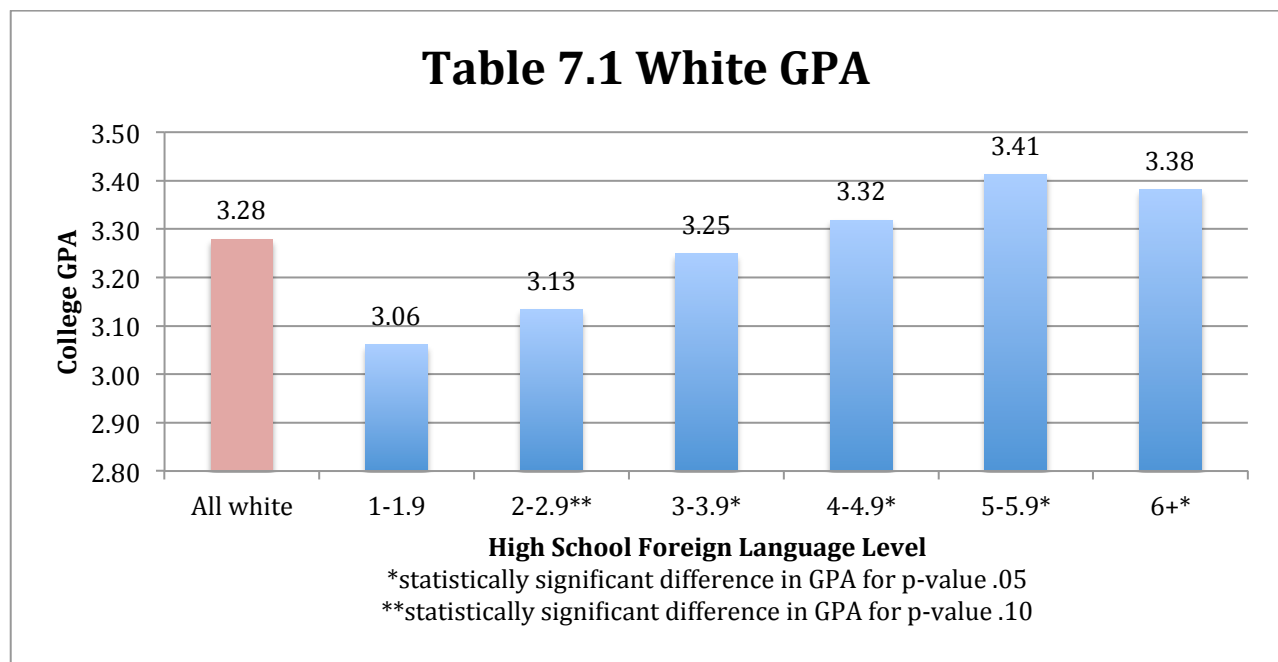
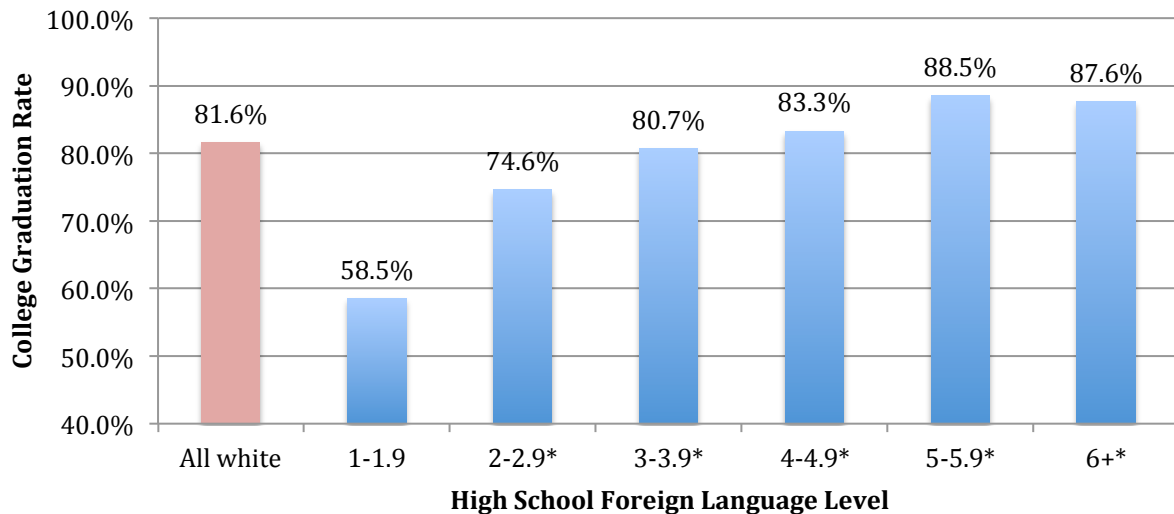
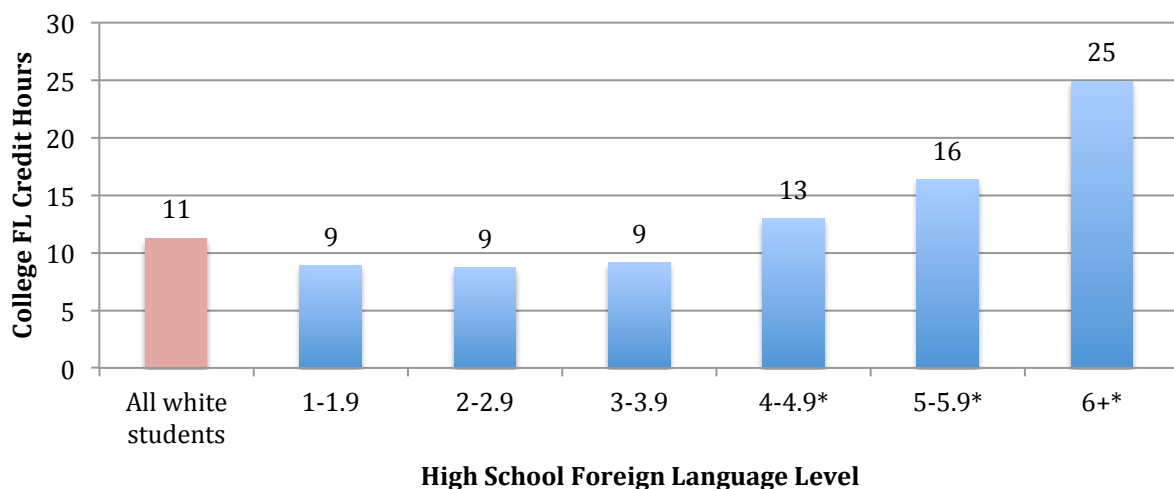


Table 7.2 White Graduation Rates

*statistically significant difference in graduation rate for p-value .05
**statistically significant difference in graduation rate for p-value .10

Table 7.3 White College Foreign Language Credit

*Statistically significant difference in average FL credits for p-value .05
**Statistically significant difference in average FL credits for p-value .10

SAT Score Comparisons

Numerous studies suggest that studying foreign language leads to higher standardized test scores, specifically on the SAT and ACT. Additionally, one could assume that achievement on college entrance exams indicates future success in college. I tested the educational outcomes of students across foreign language levels in two SAT subgroups: students who scored above 1190, and students who scored at or below 1190. 1190 is the median SAT score for the dataset. Tables 8.1, 8.2, and 8.3 show the GPA, graduation rates, and college foreign language attainment for students who scored above 1190 on the SAT. Tables 9.1, 9.2, and 9.3 indicate results for students who scored at or below 1190 on the SAT.

SAT Score >1190

Students who scored above 1190 on the SAT saw an average GPA of 3.42, which is higher than the overall average OSU GPA. Students in this subgroup had a higher average GPA than the OSU total average across all foreign language levels. Students with less than 1-1.9 credits of foreign language had an average GPA of 3.28, which is still higher than the overall average OSU GPA. Results also show that students who earned 5-5.9 foreign language credits earned an average GPA of 3.50, which is significantly higher than the average overall average GPA. Results show high achieving students perform well in college regardless of foreign language, demonstrating that the SAT is a clear indicator of student aptitude. Results also reflect the previous trend that students who earn at least four credits of foreign language earn higher than average GPA for that subgroup. Differences in GPA for students who scored above 1190 on the

SAT were statistically significant for the 5-5.9 level when compared against students in the 1-1.9 level ($p < .10$).

The average graduation rate for students who scored above an 1190 on the SAT was 87.2%, which is higher than OSU's overall average graduation rate. Unlike the respective subgroup for GPA, students with less than two foreign language credits had graduation rates lower than the overall OSU graduation rate. Students who earned at least three foreign language credits in high school experienced a higher average graduation rate average for the subgroup. When compared against students in the 1-1.9 level, differences in graduation rates were statistically significant for students at or above three foreign language credits ($p < .10$, $p < .05$).

Results for college foreign language attainment were not statistically significant and do not indicate a clear relationship between high school and college foreign language attainment.

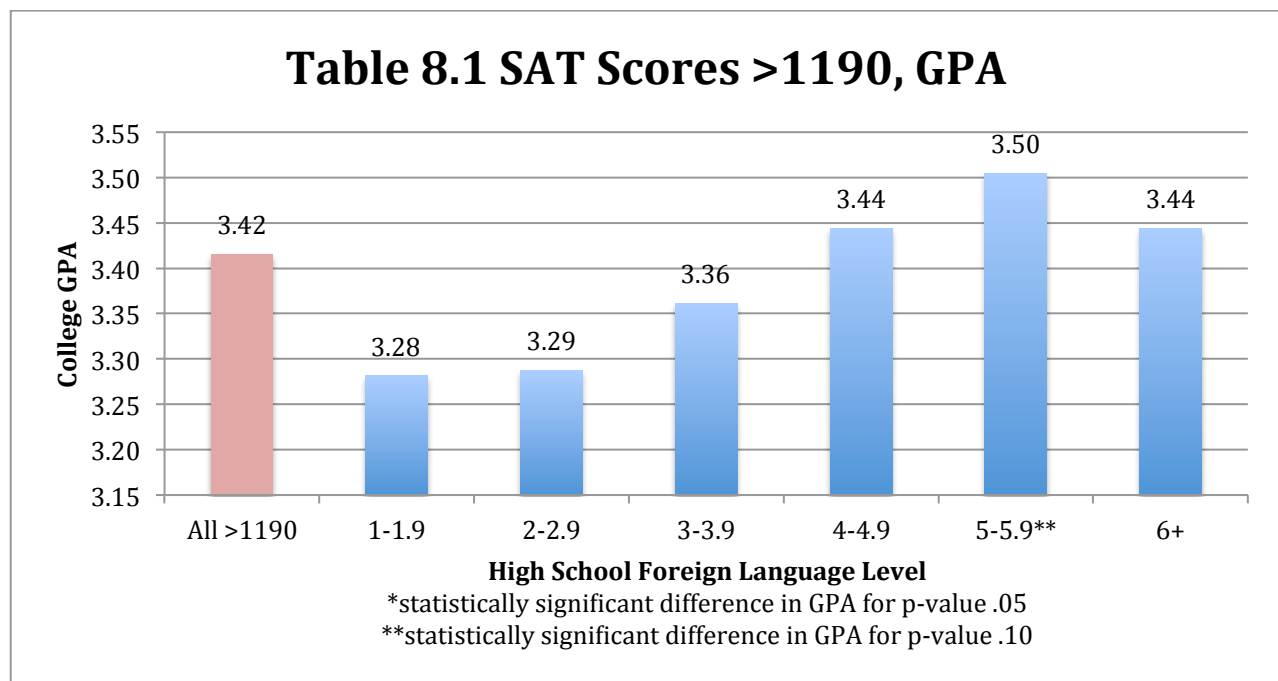
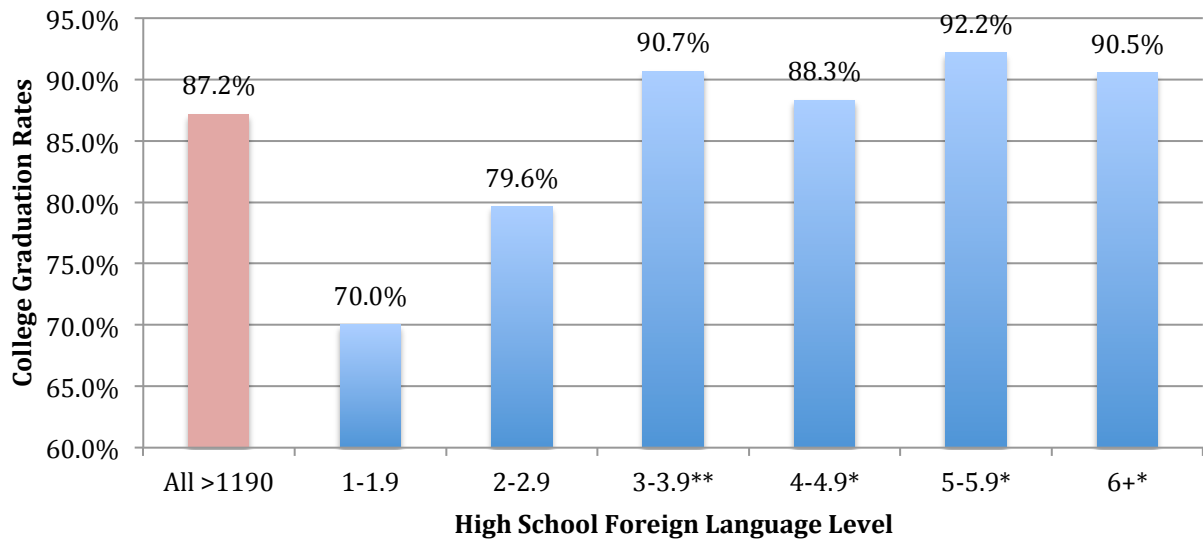
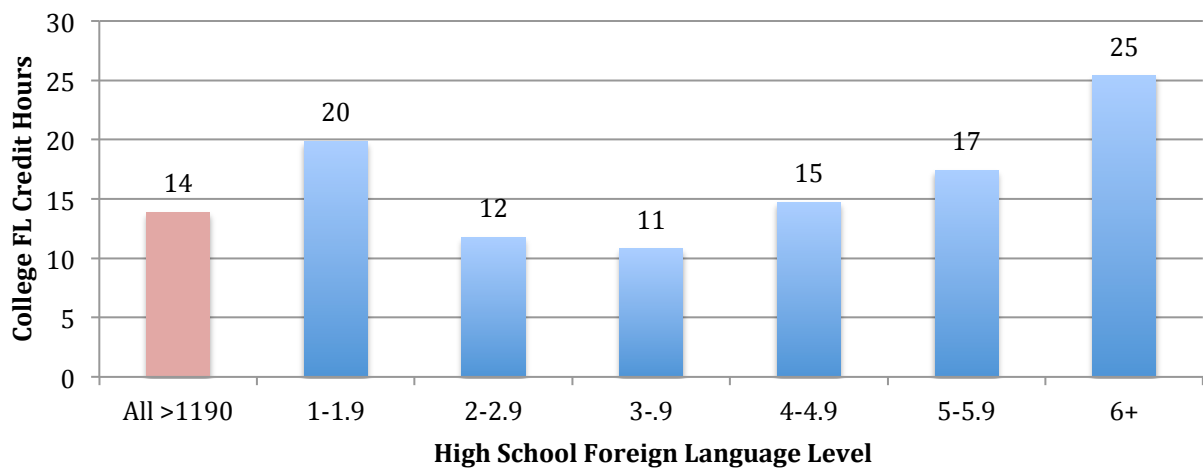


Table 8.2 SAT >1190, Graduation Rates

*statistically significant difference in graduation rate for p-value .05
**statistically significant difference in graduation rate for p-value .10

Table 8.3 SAT>1190 College Foreign Language Credit Hours

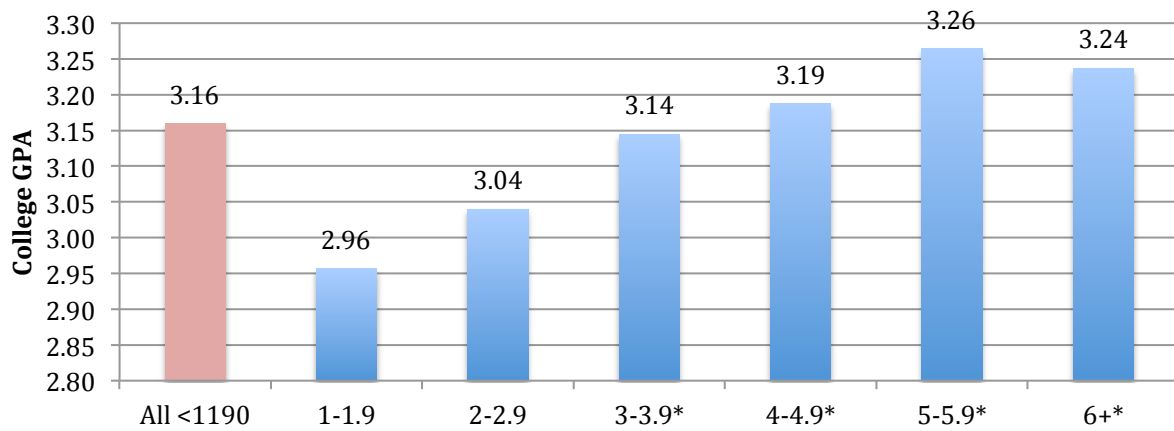
*Statistically significant difference in average FL credits for p-value .05
**Statistically significant difference in average FL credits for p-value .10

SAT Score ≤1190

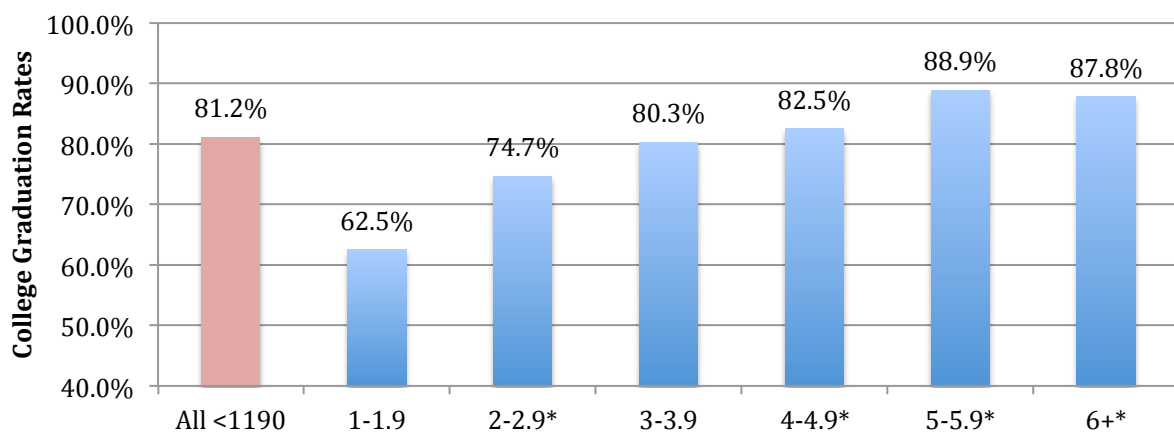
Analysis of students who scored below 1190 on the SAT differs from previous results. The average GPA of students who scored below 1190 was 3.16. Consistent with previous subgroups, students in this subgroup with at least four foreign language credits had an average GPA higher than the total for the subgroup. When compared to students with 1-1.9 credits, the differences in GPA were statistically significant for levels 3-3.9 and higher ($p < .05$)

The graduation rates for the SAT<1190 subgroup reflect similar results. Students with at least four foreign language credits graduated at higher rates than the average for all students who scored at or below 1190 on the SAT. When compared against students with 1-1.9 foreign language credits, differences in graduation rates were statistically significant for students with 2-2.9 credits and above four credits ($p < .05$)

Results for students who scored at or below 1190 on the SAT were not statistically significant. Although students who earned 6+ foreign language credits in high school attained an average of 26 foreign language credit hours in college, results show that this is not clearly attributable to high school foreign language. This suggests that by measure of student aptitude, pursuit of college foreign language is not related to high school foreign language.

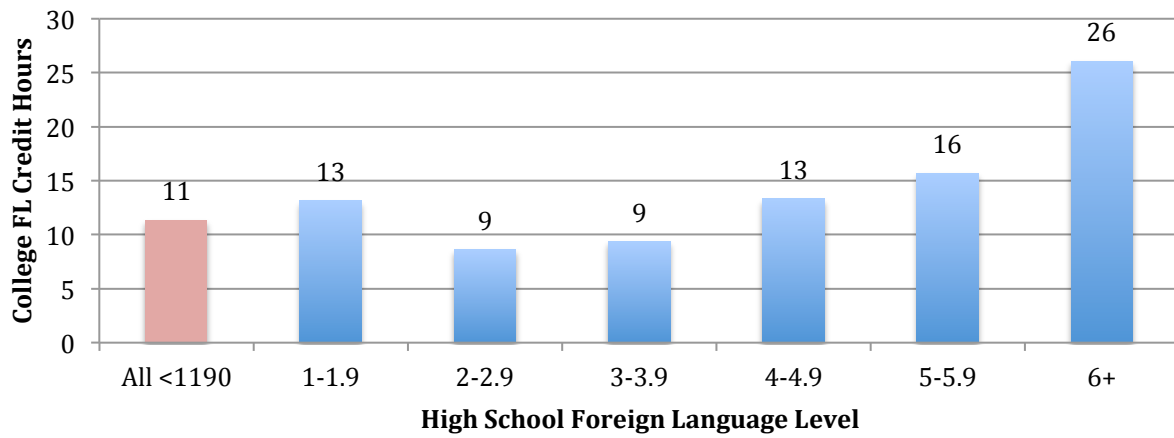
Table 9.1 SAT ≤ 1190 GPA

*statistically significant difference in GPA for p-value .05
**statistically significant difference in GPA for p-value .10

Table 9.2 SAT ≤ 1190 Graduation Rates

*statistically significant difference in graduation rate for p-value .05
**statistically significant difference in graduation rate for p-value .10

Table 9.3 SAT \leq 1190 College Foreign Language Credit Hours



*Statistically significant difference in average FL credits for p-value .05

**Statistically significant difference in average FL credits for p-value .10

Summary and Conclusions

GPA and Graduation Rate

The analysis provides evidence that students who earn at least four credits of foreign language in high school earn higher GPAs and have higher graduation rates than students who opt to not pursue foreign language, or who do not have access to language courses.

For students of color, the advantages of foreign language differed. African American students with at least four foreign language credits earned higher GPAs and graduation rates that were statistically significant. African American students with 5-5.9 foreign language credits had an average graduation rate that was roughly 15% higher than the average for African American students overall. This suggests that among this subgroup, high school foreign language may have an impact on educational outcomes. For Hispanic students, average GPA rose with foreign language level, and average

graduation rate was nearly 20% higher for students with 6+ foreign language credits. Still, results were not statistically significant for Hispanic students' graduation rates, demonstrating that high school foreign language has little to no bearing on that outcome.

White students, high-income students, and students who scored higher than 1190 on the SAT all achieve higher GPAs and graduation rates than students of color and low-income students. For the white and high income subgroups, results consistently showed that students with at least four foreign language credits achieved higher GPAs and graduated at higher rates, which were statistically significant when compared against the lowest language level for the respective subgroup. This suggests that GPA and graduation rate rely on student aptitude, but that those high-achieving students still performed better with higher high school foreign language levels. When measuring student outcomes for both SAT subgroups, I found that foreign language has only marginal impact on students who scored higher than 1190; but, for students who scored at or below 1190, GPA and graduation rates were higher among students who earned at least four foreign language credits. With SAT scores an indicator of student aptitude, these results suggest that despite student aptitude, foreign language can still have an impact on GPA and graduation rates.

College Foreign Language Attainment

The results of college foreign language attainment are limited by the available data regarding general education requirements and students who apply high school foreign language credit to their college transcript. Among most subgroups (with

exception to Hispanic and white students), the average foreign language credit hour attainment is slightly higher for students who earned 1-1.9 credits in high school than for students who earned 2-2.9 credits; the transfer of high school foreign language credit to college may explain this. Differences in college foreign language attainment were only statistically significant for Hispanic students and white students across 4-4.9-6+ foreign language levels, and high-income students who earned 6+ foreign language credits. These results indicate that pursuit of foreign language in college cannot always be explained by high school foreign language attainment.

The results do not conclude a causal relationship between high school foreign language and college GPA, graduation rate, and college foreign language attainment. However, the results do indicate that within several subgroups, higher levels of foreign language correlate to higher GPAs and graduation rates, suggesting that foreign language is a predictor for college achievement. Furthermore, the impact of coursework such as foreign language ought to be considered when policymakers and administrators set high school graduation requirements and curriculum requirements.

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